

Basic Life Support

Marine Corps Medical Training



3D Marines

OPEN THE AIRWAY AND RESTORE BREATHING

Breathing Process:

All living things must have oxygen to live. Through the breathing process, the lungs draw oxygen from the air and put it into the blood. The heart then pumps the blood through the body to be used by the living cells which require a constant supply of oxygen. Some cells are more dependent on a constant supply of oxygen than others. Cells of the brain may die within 4 to 6 minutes without oxygen. Once these cells die, they are lost forever since they DO NOT regenerate. This could result in permanent brain damage, paralysis, or death.



OPEN THE AIRWAY AND RESTORE BREATHING

Assessment (Evaluation) Phase:

- a. Check for responsiveness (Figure 2-1A)--establish whether the casualty is conscious by gently shaking him and asking "Are you O.K.?"
- b. Call for help (Figure 2-1B).
- c. Position the unconscious casualty so that he is lying on his back and on a firm surface (Figure 2-1C).

WARNING

If the casualty is lying on his chest (prone position), *cautiously roll the casualty as a unit so that his body does not twist* (which may further complicate a neck, back or spinal injury)

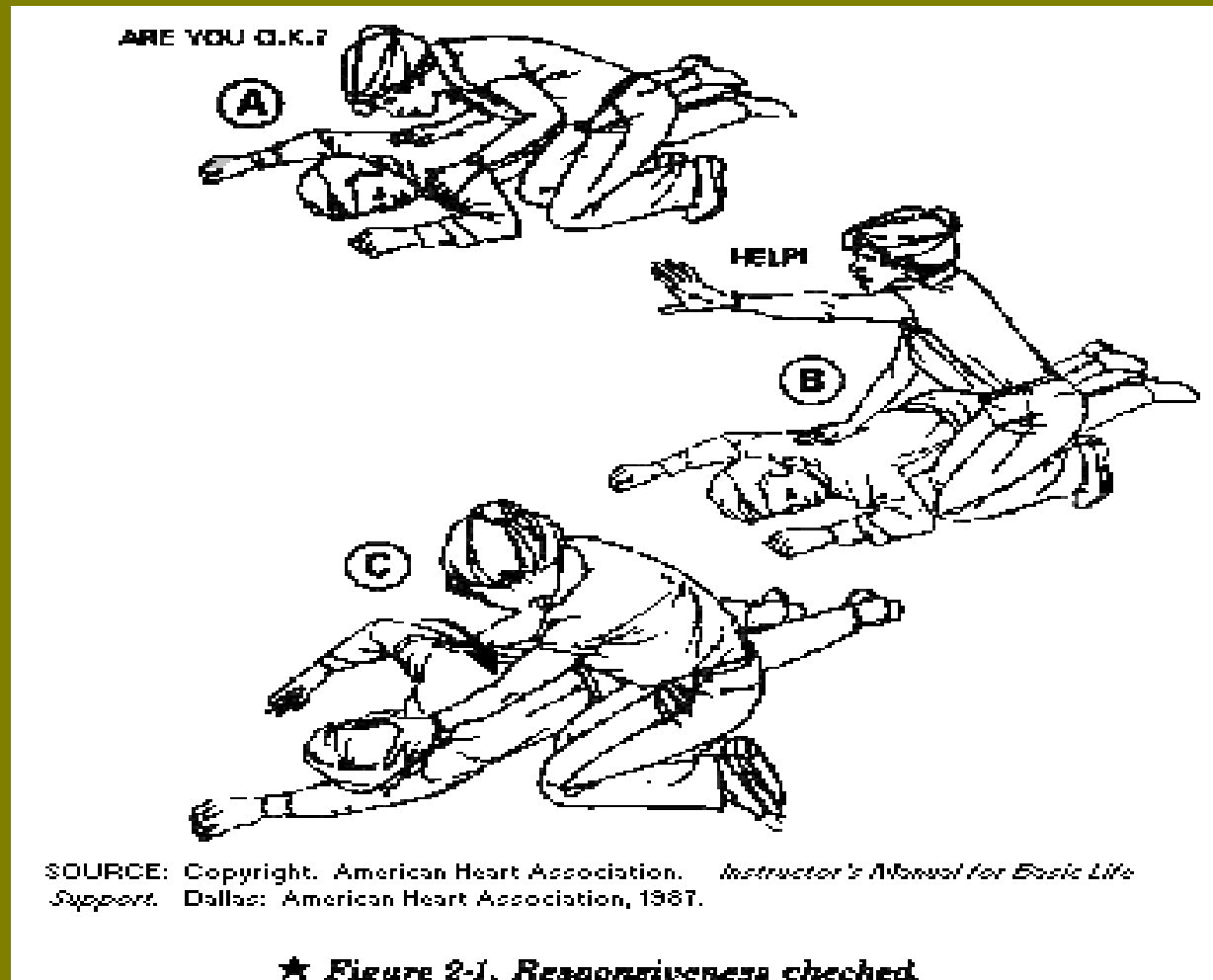


ASSESSMENT (cont'd)

1. Straighten the casualty's legs. Take the casualty's arm that is nearest to you and move it so that it is straight and above his head. Repeat procedure for the other arm.
2. Kneel beside the casualty with your knees near his shoulders (leave space to roll his body) (Figure 2-1B). Place one hand behind his head and neck for support. With your other hand, grasp the casualty under his far arm (Figure 2-1C).
3. Roll the casualty toward you using a steady and even pull. His head and neck should stay in line with his back.
4. Return the casualty's arms to his side. Straighten his legs. Reposition yourself so that you are now kneeling at the level of the casualty's shoulders. However, if a neck injury is suspected, and the jaw thrust will be used, kneel at the casualty's head, looking toward his feet.



ASSESSMENT (cont'd)



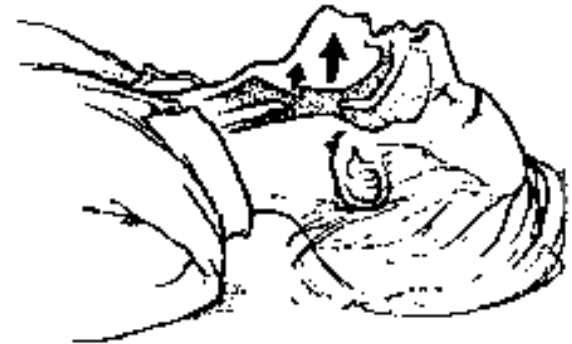
Opening the Airway-Unconscious and Not Breathing Casualty

The tongue is the single most common cause of an airway obstruction (Figure 2-2). In most cases, the airway can be cleared by simply using the head-tilt/chin-lift technique. This action pulls the tongue away from the air passage in the throat (Figure 2-3).



SOURCE: Copyright. American Heart Association. *Instructor's Manual for Basic Life Support*. Dallas: American Heart Association, 1987.

★ **Figure 2-2. Airway blocked by tongue.**



SOURCE: Copyright. American Heart Association. *Instructor's Manual for Basic Life Support*. Dallas: American Heart Association, 1987.

★ **Figure 2-3. Airway opened (tilted).**



Opening the Airway-Unconscious and Not Breathing Casualty

Step ONE (081-831-1042). Call for help and then position the casualty. Move (roll) the casualty onto his back (Figure 2-1C above).

CAUTION

Take care in moving a casualty with a suspected neck or back injury. Moving an injured neck or back may permanently injure the spine.

NOTE

If foreign material or vomitus is visible in the mouth, it should be removed, but do not spend an excessive amount of time doing so.

Step TWO (081-31-1042). Open the airway using the *jaw-thrust* or *head-tilt/chin-lift* technique.

NOTE

The head tilt/chin lift is an important procedure in opening the airway; however, use extreme care because excess force in performing this maneuver may cause further spinal injury. In a casualty with a suspected neck injury or severe head trauma, the safest approach to opening the airway is the *jaw-thrust* technique because in most cases it can be accomplished without extending the neck.



Opening the Airway-Unconscious and Not Breathing Casualty

Perform the jaw thrust technique. The jaw thrust may be accomplished by the rescuer grasping the angles of the casualty's lower jaw and lifting with both hands, one on each side, displacing the jaw forward and up (Figure 2-4). If the lips close, the lower lip can be retracted with the thumb. If mouth-to-mouth breathing is necessary, close the nostrils by placing your cheek tightly against them. The head should be carefully supported without tilting it backwards or turning it from side to side. The jaw thrust is the safest *first approach* to opening the airway of a casualty who has a *suspected neck injury* because in most cases it can be accomplished without exte



SOURCE: Copyright. American Heart Association. *Instructor's Manual for Basic Life Support*. Dallas: American Heart Association, 1987.

★ **Figure 2-4. Jaw-thrust technique of opening airway.**



Opening the Airway-Unconscious and Not Breathing Casualty

Perform the head tilt/chin lift technique: Place one hand on the casualty's forehead and apply firm, backward pressure with the palm to tilt the head back. Place the fingertips of the other hand under the bony part of the lower jaw and lift, bringing the chin forward. The thumb should be used to lift the jawline (Figure 2-5).



SOURCE: Copyright. American Heart Association. *Instructor's Manual for Basic Life Support*. Dallas: American Heart Association, 1987.

★ *Figure 2-5. Head-tilt/chin-lift technique of opening airway.*

NOTE

The fingers should not press deeply into the soft tissue under the chin because the airway may be obstructed.



Opening the Airway-Unconscious and Not Breathing Casualty

Step THREE. Check for breathing (while maintaining an airway). After establishing an *open airway*, it is important to *maintain* that airway in an open position. Often the act of just opening and maintaining the airway will allow the casualty to breathe properly. Once the rescuer uses one of the techniques to open the airway (jaw-thrust or head-tilt/chin-lift), he should maintain that head position to keep the airway open. While maintaining an open airway the rescuer should check for breathing by observing the casualty's chest and performing the following actions within 3 to 5 seconds:



Opening the Airway-Unconscious and Not Breathing Casualty

- (1) **LOOK** for the chest to rise and fall.
- (2) **LISTEN** for air escaping during exhalation by placing your ear near the casualty's mouth.
- (3) **FEEL** for the flow of air on your cheek (see Figure 2-6).
- (4) If the casualty does not resume breathing, give mouth-to-mouth resuscitation.



Opening the Airway-Unconscious and Not Breathing Casualty

NOTE

Although the rescuer may notice that the casualty is making respiratory efforts, the airway may still be obstructed and opening the airway may be all that is needed. If the casualty resumes breathing, the rescuer should continue to help maintain an open airway.

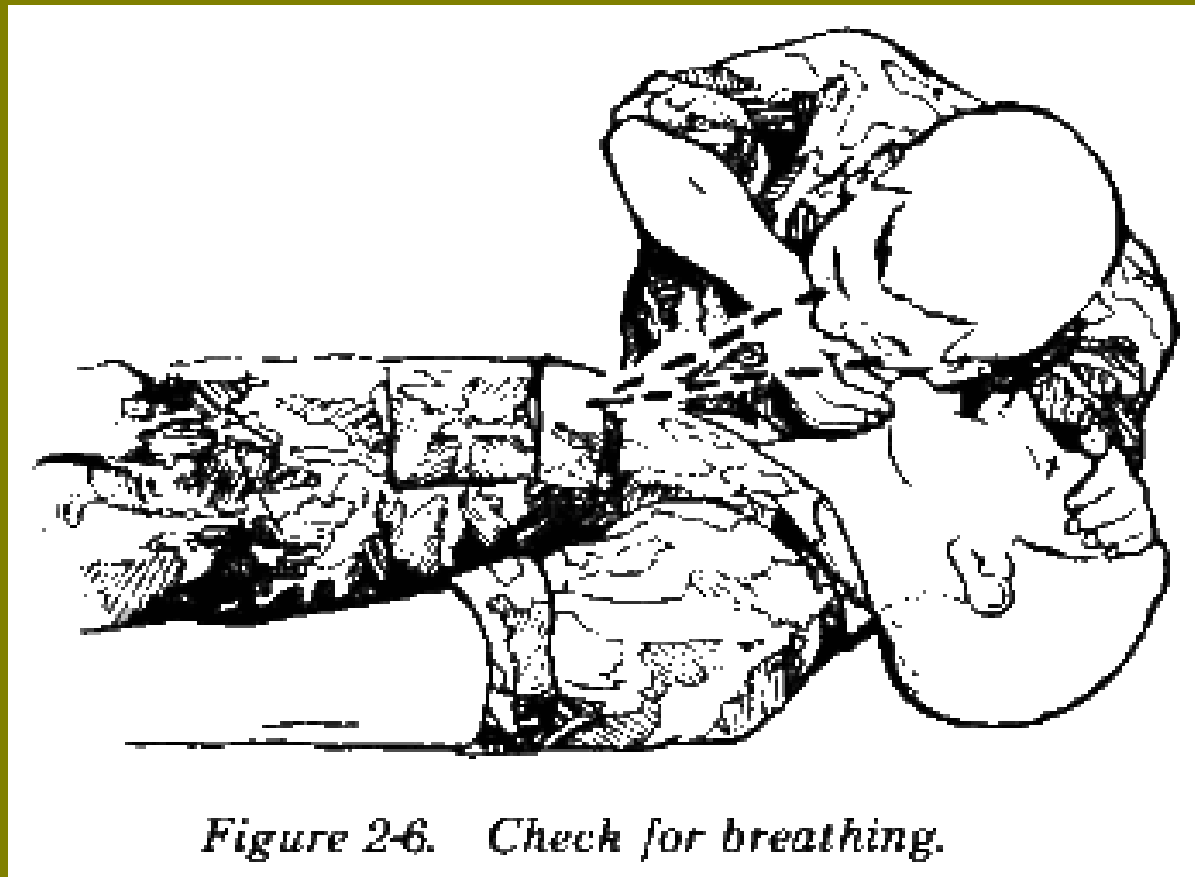


Figure 2-6. Check for breathing.



Rescue Breathing (Artificial Respiration)

If the casualty does not promptly resume adequate spontaneous breathing after the airway is open, *rescue breathing (artificial respiration)* must be started. Be calm! Think and act quickly! The sooner you begin rescue breathing, the more likely you are to restore the casualty's breathing. If you are in doubt whether the casualty is breathing, give artificial respiration, since it can do no harm to a person who is breathing. If the casualty is breathing, you can feel and see his chest move. Also, if the casualty is breathing, you can feel and hear air being expelled by putting your hand or ear close to his mouth and nose.



Rescue Breathing (Artificial Respiration)

Preliminary Steps--All Rescue Breathing Methods

- a. Step ONE.* Establish unresponsiveness. Call for help. Turn or position the casualty.
- b. Step TWO.* Open the airway.
- c. Step THREE.* Check for breathing by placing your ear over the casualty's mouth and nose, and looking toward his chest:
 - (1) **Look** for rise and fall of the casualty's chest.
 - (2) **Listen** for sounds of breathing.
 - (3) **Feel** for breath on the side of your face. If the chest does not rise and fall and no air is exhaled, then the casualty is breathless (not breathing). (This evaluation procedure should take only 3 to 5 seconds.) *Perform* rescue breathing if the casualty is not breathing.



Rescue Breathing (Artificial Respiration)

NOTE

Although the rescuer may notice that the casualty is making respiratory efforts, the airway may still be obstructed and opening the airway may be all that is needed. If the casualty resumes breathing, the rescuer should continue to help maintain an open airway.



Rescue Breathing (Artificial Respiration)

Mouth-to-Mouth Method

Preliminary Steps.

Step ONE (081-831-1048). If the casualty is not breathing, place your hand on his forehead, and pinch his nostrils together with the thumb and index finger of this same hand. Let this same hand exert pressure on his forehead to maintain the backward *head-tilt* and maintain an open airway. With your other hand, keep your fingertips on the bony part of the lower jaw near the chin and lift (Figure 2-7).



SOURCE: Copyright. American Heart Association. *Instructor's Manual for Basic Life Support.* Dallas: American Heart Association, 1987.

★ *Figure 2-7. Head-tilt/chin-lift.*



Rescue Breathing (Artificial Respiration)

Mouth-to-Mouth Method

NOTE

If you suspect the casualty has a neck injury and you are using the jaw thrust technique, close the nostrils by placing your cheek tightly against them.

Step TWO- Take a deep breath and place your mouth (in an airtight seal) around the casualty's mouth (Figure 2-8). (If the injured person is small, cover both his nose and mouth with your mouth, sealing your lips against the skin of his face.)



Figure 2-8. Rescue breathing.



Rescue Breathing (Artificial Respiration)

Mouth-to-Mouth Method

Step THREE (081-831-1042). Blow two full breaths into the casualty's mouth (1 1/2 to 2 seconds per breath), taking a breath of fresh air each time before you blow. Watch out of the corner of your eye for the casualty's chest to rise. If the chest rises, sufficient air is getting into the casualty's lungs. Therefore, proceed as described in step FOUR below.



Rescue Breathing (Artificial Respiration)

Mouth-to-Mouth Method

If the chest does not rise, do the following (*a*, *b*, and *c* below) and then attempt to ventilate again:

- (*a*) Take corrective action immediately by reestablishing the airway. Make sure that air is not leaking from around your mouth or out of the casualty's pinched nose.
- (*b*) Reattempt to ventilate.
- (*c*) If chest still does not rise, take the necessary action to open an obstructed airway.



Rescue Breathing (Artificial Respiration)

Mouth-to-Mouth Method

NOTE

If the initial attempt to ventilate the casualty is unsuccessful, reposition the casualty's head and repeat rescue breathing. Improper chin and head positioning is the most common cause of difficulty with ventilation. If the casualty cannot be ventilated after repositioning the head, proceed with foreign body airway obstruction maneuvers (see Open an Obstructed Airway).



Rescue Breathing (Artificial Respiration)

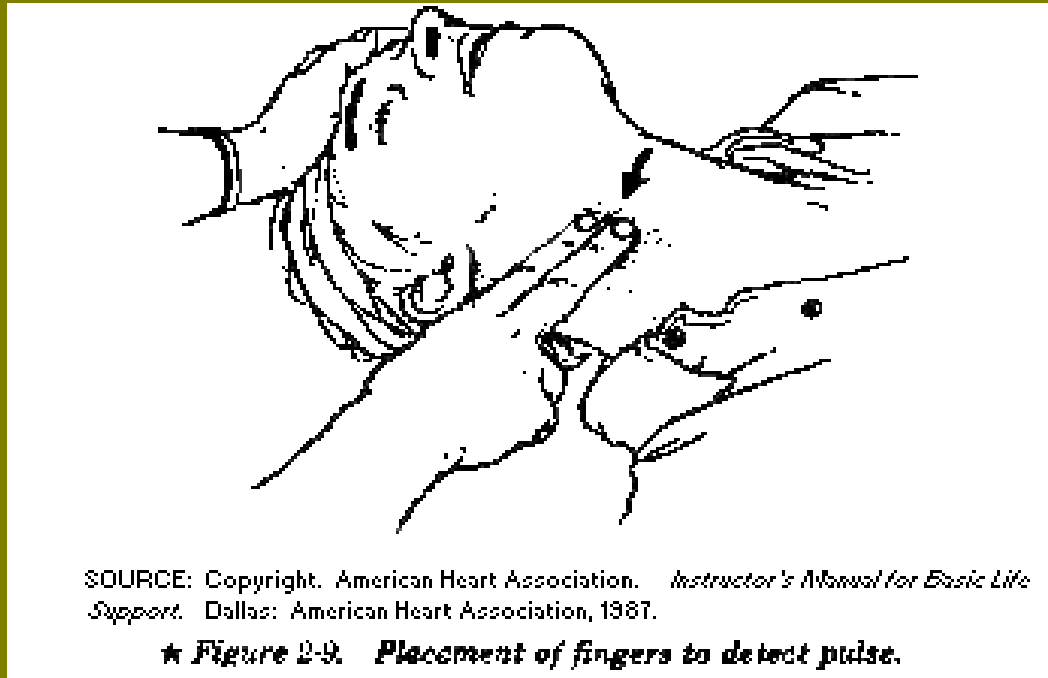
Mouth-to-Mouth Method

(4) *Step FOUR (081-831-1042)*. After giving two breaths which cause the chest to rise, attempt to locate a pulse on the casualty. Feel for a pulse on the side of the casualty's neck closest to you by placing the first two fingers (index and middle fingers) of your hand on the groove beside the casualty's Adam's apple (carotid pulse) (Figure 2-9). (Your thumb should not be used for pulse taking because you may confuse your pulse beat with that of the casualty.) Maintain the airway by keeping your other hand on the casualty's forehead. Allow 5 to 10 seconds to determine if there is a pulse.



Rescue Breathing (Artificial Respiration)

Mouth-to-Mouth Method



(a) If a pulse is found and the casualty is breathing --STOP; allow the casualty to breathe on his own. If possible, keep him warm and comfortable.

(b) If a pulse is found and the casualty is not breathing, continue rescue breathing.

(c) If a pulse is not found, seek medically trained personnel for help.

Rescue Breathing (Artificial Respiration)

Mouth-to-Mouth Method

Rescue breathing (mouth-to-mouth or mouth-to-nose resuscitation) is performed at the rate of about one breath every 5 seconds (12 breaths per minute) with rechecks for pulse and breathing after every 12 breaths. Rechecks can be accomplished in 3 to 5 seconds.



Rescue Breathing (Artificial Respiration)

Mouth-to-Nose Method

Use this method if you cannot perform mouth-to-mouth rescue breathing because the casualty has a severe jaw fracture or mouth wound or his jaws are tightly closed by spasms. The mouth-to-nose method is performed in the same way as the mouth-to-mouth method except that you blow into the nose while you hold the lips closed with one hand at the chin. You then remove your mouth to allow the casualty to exhale passively. It may be necessary to separate the casualty's lips to allow the air to escape during exhalation.



Airway Obstructions


In order for oxygen from the air to flow to and from the lungs, the upper airway must be unobstructed.

a. Upper airway obstructions often occur because:

1. The casualty's tongue falls back into his throat while he is unconscious as a result of injury, cardiopulmonary arrest, and so forth. (The tongue falls back and obstructs, it *is not* swallowed.)



Airway Obstructions

2. Foreign bodies become lodged in the throat. These obstructions usually occur while eating (meat most commonly causes obstructions). Choking on food is associated with:
 - Attempting to swallow large pieces of poorly chewed food.
 - Drinking alcohol.
 - Slipping dentures.
3. The contents of the stomach are regurgitated and may block the airway.
4.  Blood clots may form as a result of head and facial injuries.

Airway Obstructions

b. Upper airway obstructions may be prevented by taking the following precautions:

1. Cut food into small pieces and take care to chew slowly and thoroughly.
2. Avoid laughing and talking when chewing and swallowing.
3. Restrict alcohol while eating meals.
4. Keep food and foreign objects from children while they walk, run, or play.
5. Consider the correct positioning maintenance of the



Airway Obstructions

c. Upper airway obstruction may cause either *partial* or *complete* airway blockage.

1. *Partial airway obstruction*. The casualty may still have an air exchange. A *good air exchange* means that the casualty can cough forcefully, though he may be wheezing between coughs. You, the rescuer, should not interfere, and should encourage the casualty to cough up the object on his own. A *poor air exchange* may be indicated by weak coughing with a high pitched noise between coughs. Additionally, the casualty may show signs of shock (*for example*, paleness of the skin bluish tint around the lips or fingernail beds) indicating a need for oxygen. You should assist the casualty and treat him as though he had a complete obstruction.



Airway Obstructions

c. Upper airway obstruction may cause either *partial* or *complete* airway blockage (cont'd).

2. Complete airway obstruction. A complete obstruction (no air exchange) is indicated if the casualty cannot speak, breathe, or cough at all. He may be clutching his neck and moving erratically. In an unconscious casualty a complete obstruction is also indicated if after opening his airway you cannot ventilate him.



Airway Obstructions

Opening the Obstructed Airway--Conscious Casualty

Clearing a conscious casualty's airway obstruction can be performed with the casualty either standing or sitting, and by following a relatively simple procedure:

Step ONE. Ask the casualty if he can speak or if he is choking. Check for the universal choking sign (Figure 2-18).

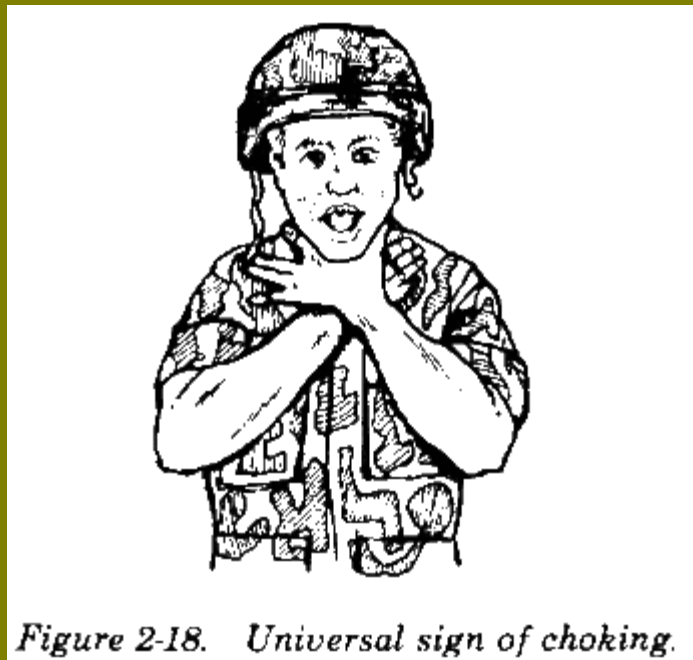


Figure 2-18. Universal sign of choking.



Airway Obstructions

Opening the Obstructed Airway--Conscious Casualty

Step TWO. If the casualty can speak, encourage him to attempt to cough; the casualty still has a *good* air exchange. If he is able to speak or cough effectively, DO NOT interfere with his attempts to expel the obstruction

Step THREE. Listen for high pitched sounds when the casualty breathes or coughs (poor air exchange). If there is poor air exchange or no breathing, CALL for **HELP** and immediately deliver manual thrusts (either an abdominal or chest thrust).



Airway Obstructions

Opening the Obstructed Airway--Conscious Casualty

NOTE

The manual thrust with the hands centered between the waist and the rib cage is called an abdominal thrust (or Heimlich maneuver).

The chest thrust (the hands are centered in the middle of the breastbone) is used only for an individual in the advanced stages of pregnancy, in the markedly obese casualty, or if there is a significant abdominal wound.



Airway Obstructions

Opening the Obstructed Airway--Conscious Casualty

Apply ABDOMINAL THRUSTS using the following procedures:

Stand behind the casualty and wrap your arms around his waist. Make a fist with one hand and grasp it with the other. The thumb side of your fist should be against the casualty's abdomen, in the midline and slightly above the casualty's navel, but well below the tip of the breastbone.

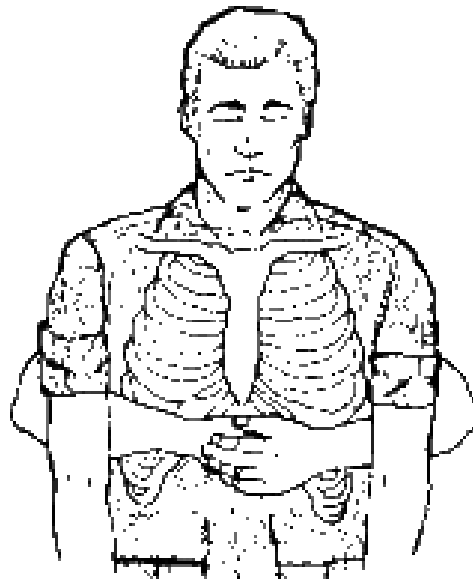


Figure 2-19. Anatomical view of abdominal thrust procedure.



Airway Obstructions

Opening the Obstructed Airway--Conscious Casualty

Press the fists into the abdomen with a quick backward and upward thrust.



Figure 2-20. Profile view of abdominal thrust.



Airway Obstructions

Opening the Obstructed Airway--Conscious Casualty

Each thrust should be a separate and distinct movement.

NOTE

Continue performing abdominal thrusts until the obstruction is expelled or the casualty becomes unconscious.

- o If the casualty becomes unconscious, call for help as you proceed with steps to open the airway and perform rescue breathing.



Airway Obstructions

Opening the Obstructed Airway--Conscious Casualty

Applying CHEST THRUSTS : An alternate technique to the abdominal thrust is the chest thrust. This technique is useful when the casualty has an abdominal wound, when the casualty is pregnant, or when the casualty is so large that you cannot wrap your arms around the abdomen.



Airway Obstructions

Opening the Obstructed Airway--Conscious Casualty

To apply chest thrusts with casualty sitting or standing:

1. Stand behind the casualty and wrap your arms around his chest with your arms under his armpits.
2. Make a fist with one hand and place the thumb side of the fist in the middle of the breastbone (take care to avoid the tip of the breastbone and the margins of the ribs).
3. Grasp the fist with the other hand and exert thrusts.



Airway Obstructions

Opening the Obstructed Airway--Conscious Casualty

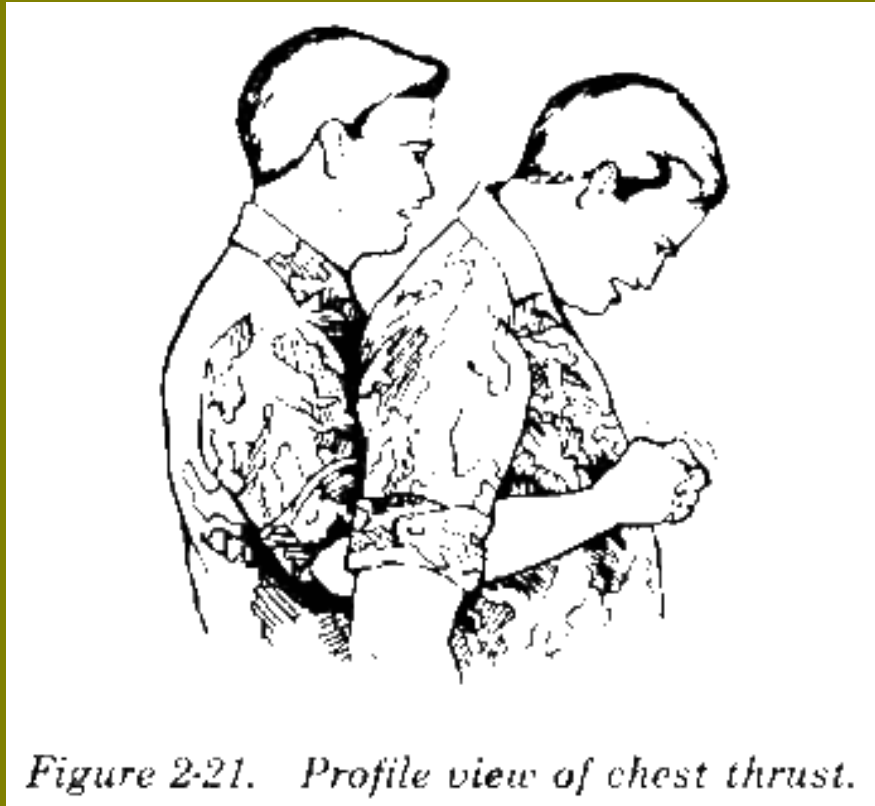


Figure 2-21. Profile view of chest thrust.

Each thrust should be delivered slowly, distinctly, and with the intent of relieving the obstruction.



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Airway Obstructions

Opening the Obstructed Airway--Conscious Casualty

Perform chest thrusts until the obstruction is expelled or the casualty becomes unconscious.

If the casualty becomes unconscious, call for help as you proceed with steps to open the airway and perform rescue breathing.



Airway Obstructions

Open an Obstructed Airway--Casualty Lying or Unconscious

The following procedures are used to expel an airway obstruction in a casualty who is lying down, who becomes unconscious, or is found unconscious (the cause unknown):

- If a conscious casualty who is choking becomes unconscious, call for help, open the airway, perform a finger sweep, and attempt rescue breathing (paragraphs 2-2 through 2-4). If you still cannot administer rescue breathing due to an airway blockage, then remove the airway obstruction using the procedures in steps *a* through *e* below.

- If a casualty is unconscious when you find him (the cause unknown), assess or evaluate the situation, call for help, position the casualty on his back, open the airway, establish breathlessness, and attempt to



Airway Obstructions

Open an Obstructed Airway--Casualty Lying or Unconscious

- a. Open the airway and attempt rescue breathing. (See task 081-831-1042, *Perform Mouth-to-Mouth Resuscitation*.)
- b. If still unable to ventilate the casualty, perform 6 to 10 manual (abdominal or chest) thrusts. (Note that the abdominal thrusts are used when casualty does not have abdominal wounds; is not pregnant or extremely overweight.)



Airway Obstructions

Open an Obstructed Airway--Casualty Lying or Unconscious
To perform the abdominal thrusts:

1. Kneel astride the casualty's thighs

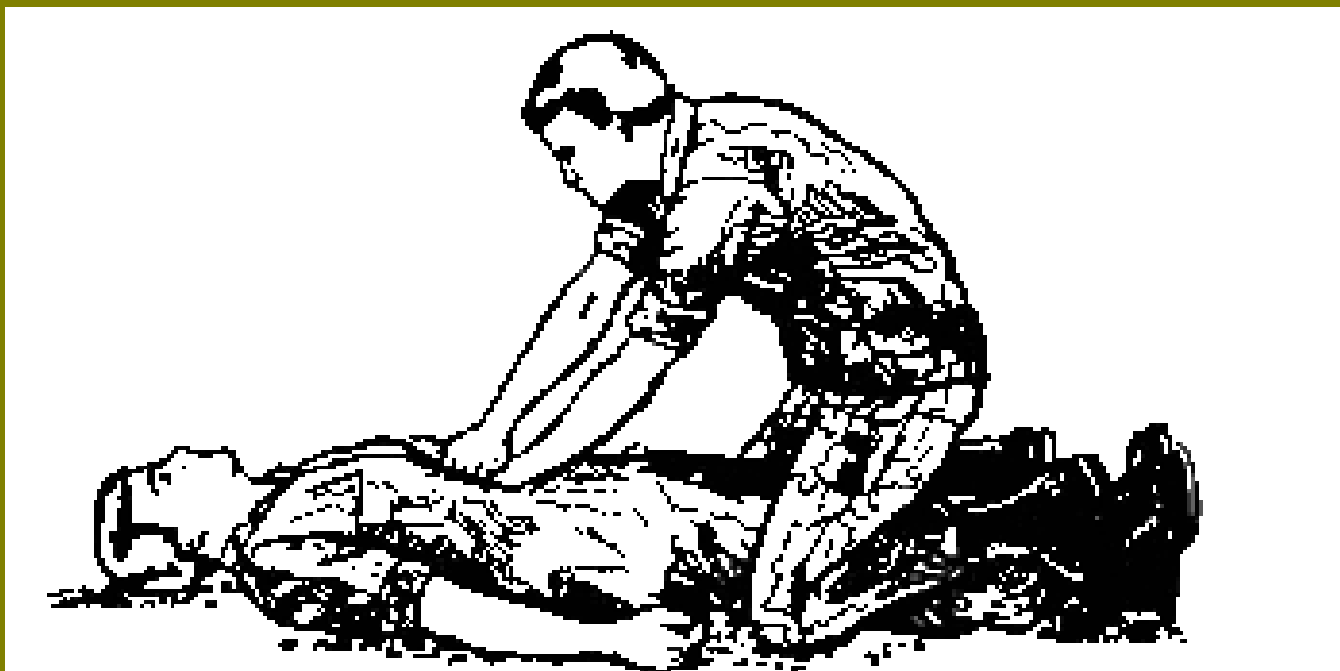


Figure 2-22. Abdominal thrust on unconscious casualty.



Airway Obstructions

Open an Obstructed Airway--Casualty Lying or Unconscious

To perform the abdominal thrusts (cont'd):

2. Place the heel of one hand against the casualty's abdomen (in the midline slightly above the navel but well below the tip of the breastbone). Place your other hand on top of the first one. Point your fingers toward the casualty's head.

3. Press into the casualty's abdomen with a quick, forward and upward thrust. You can use your body weight to perform the maneuver. Deliver each thrust slowly and distinctly.



Airway Obstructions

Open an Obstructed Airway--Casualty Lying or Unconscious

To perform the abdominal thrusts (cont'd):

4. Repeat the sequence of abdominal thrusts, finger sweep, and rescue breathing (attempt to ventilate) as long as necessary to remove the object from the obstructed airway. See paragraph *d* below.
5. If the casualty's chest rises, proceed to feeling for pulse.



Airway Obstructions

Open an Obstructed Airway--Casualty Lying or Unconscious

c. Apply chest thrusts. (Note that the chest thrust technique is an alternate method that is used when the casualty has an abdominal wound, when the casualty is so large that you cannot wrap your arms around the abdomen, or when the casualty is pregnant.)



Airway Obstructions

Open an Obstructed Airway--Casualty Lying or Unconscious

To perform the chest thrusts:

1. Place the unconscious casualty on his back, face up, and open his mouth.

Kneel close to the side of the casualty's body.

- Locate the lower edge of the casualty's ribs with your fingers. Run the fingers up along the rib cage to the notch.
- Place the middle finger on the notch and the index finger next to the middle finger on the lower edge of the breastbone. Place the heel of the other hand on the lower half of the breastbone next to the two fingers.



Airway Obstructions

Open an Obstructed Airway--Casualty Lying or Unconscious

To perform the chest thrusts (cont'd):

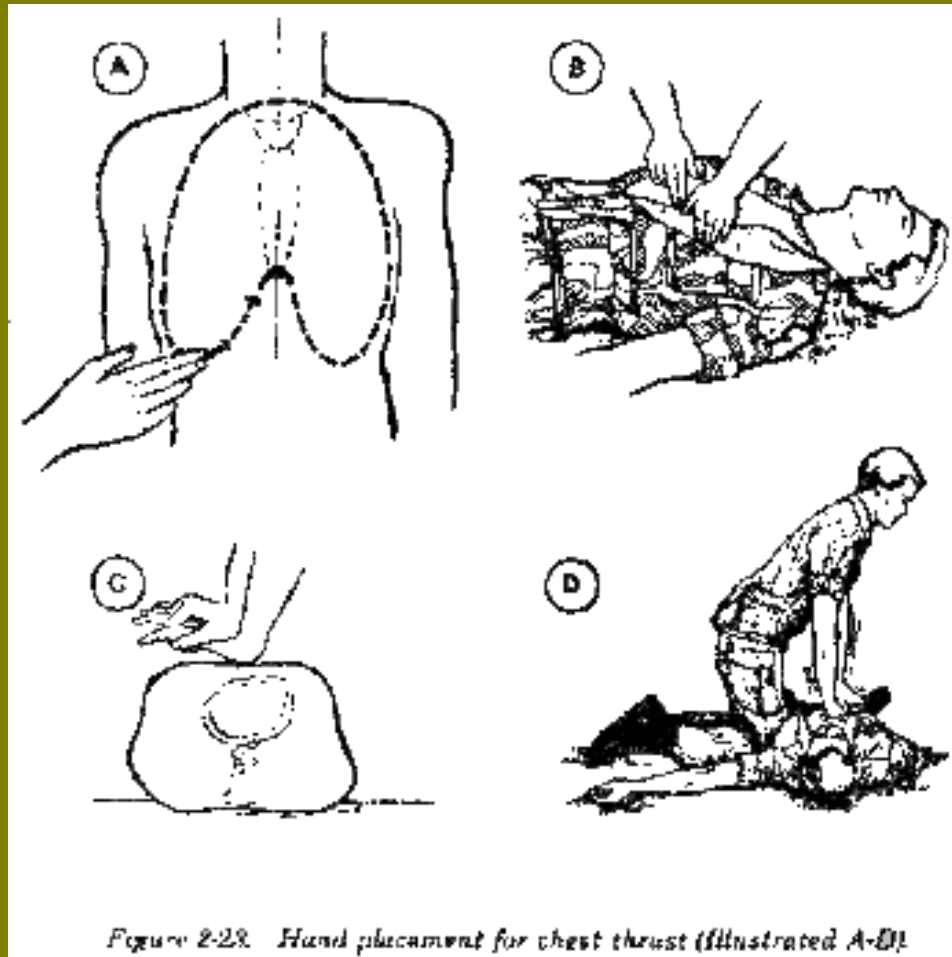


Figure 2-29. Hand placement for chest thrust (illustrated A-D).



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Airway Obstructions

Open an Obstructed Airway--Casualty Lying or Unconscious

To perform the chest thrusts (cont'd):

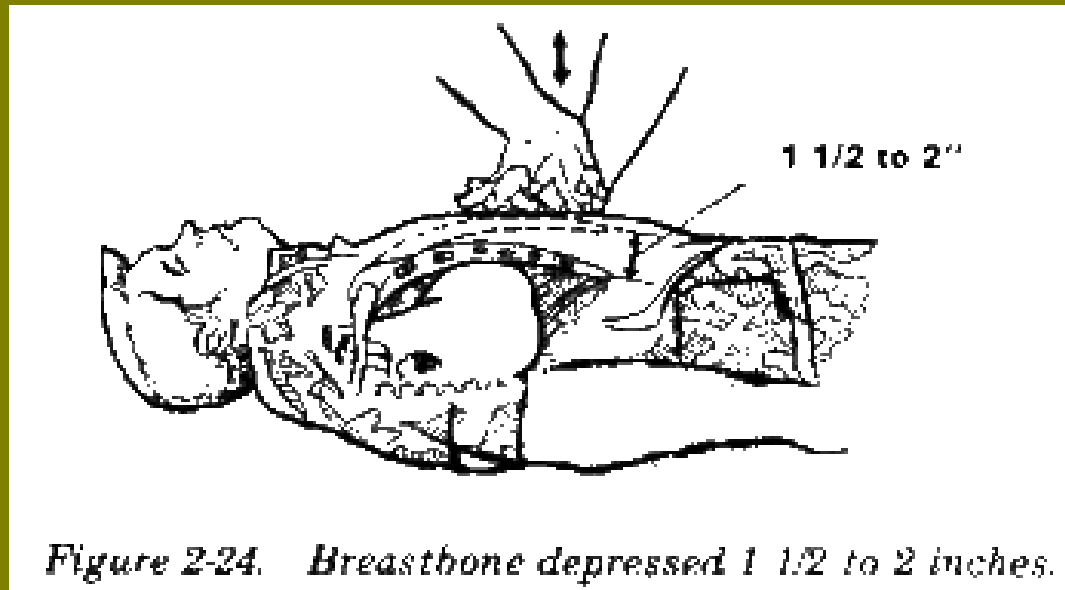


Figure 2-24. Breastbone depressed 1 1/2 to 2 inches.

(2) Repeat the sequence of chest thrust, finger sweep, and rescue breathing as long as necessary to clear the object from the obstructed airway.

(3) If the casualty's chest rises, proceed to feeling for his pulse.



Airway Obstructions

Open an Obstructed Airway--Casualty Lying or Unconscious

d. Finger Sweep. If you still cannot administer rescue breathing due to an airway obstruction, then remove the airway obstruction using the procedures in steps (1) and (2) below.

1. Place the casualty on his back, face up, turn the unconscious casualty as a unit, and call out for help.



Airway Obstructions

Open an Obstructed Airway--Casualty Lying or Unconscious

2. Perform finger sweep, keep casualty face up, use tongue-jaw lift to open mouth.

Open the casualty's mouth by grasping both his tongue and lower jaw between your thumb and fingers and lifting (tongue-jaw lift) (Figure 2-25). If you are unable to open his mouth, cross your fingers and thumb (crossed-finger method) and push his teeth apart (Figure 2-26) by pressing your thumb against his upper teeth and pressing your finger against his lower teeth.

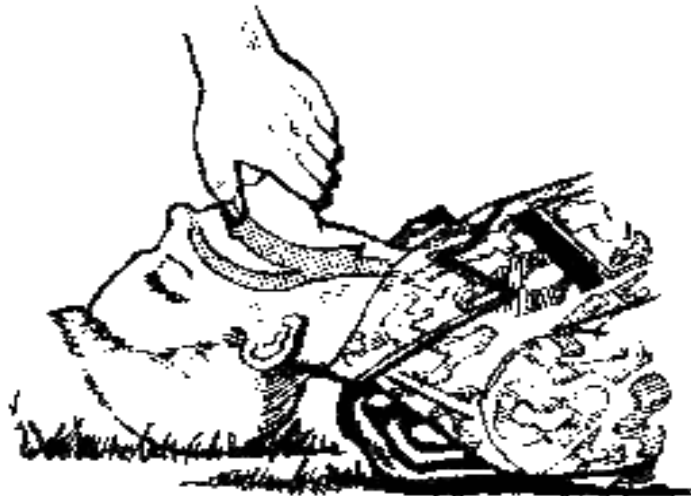
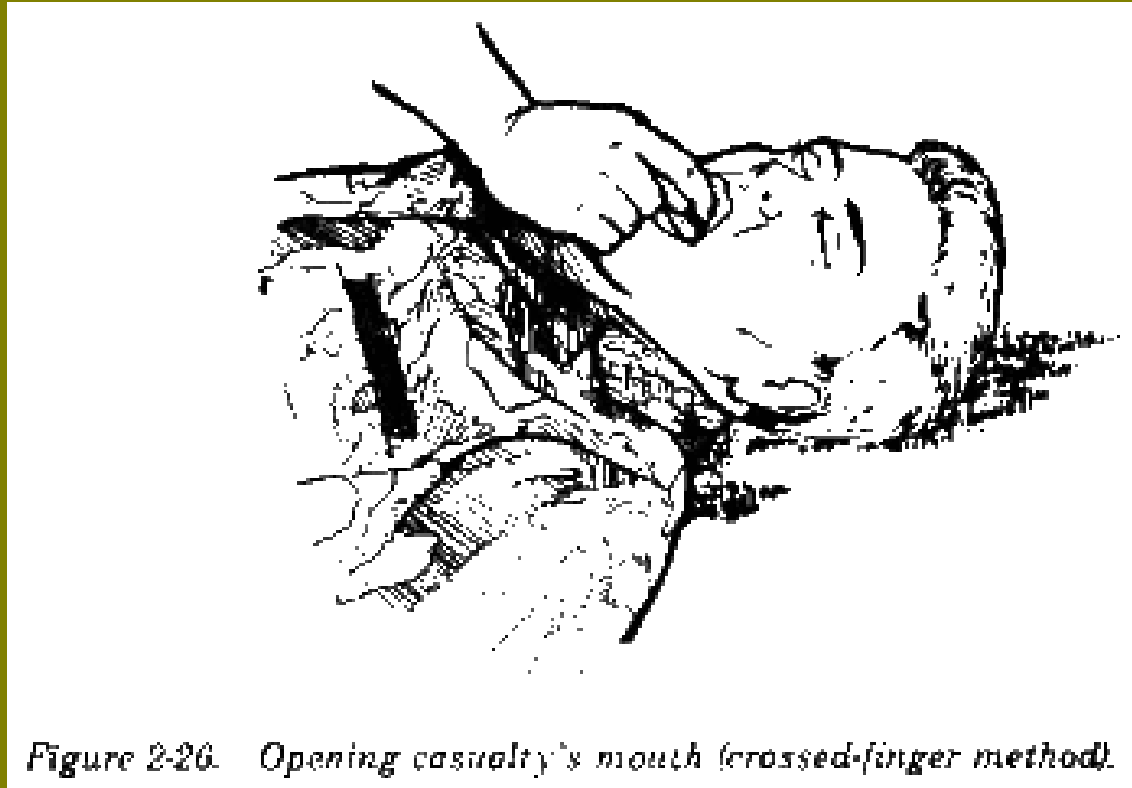


Figure 2-25. Opening casualty's mouth (tongue-jaw lift).



Airway Obstructions

Open an Obstructed Airway--Casualty Lying or

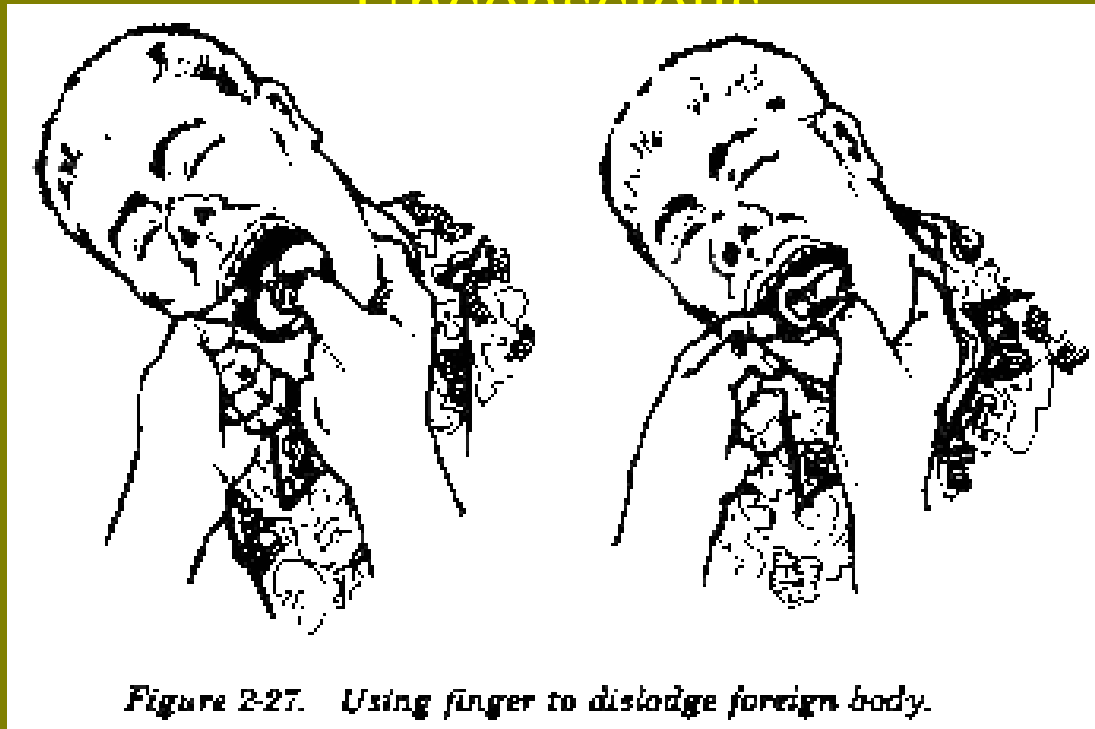


Insert the index finger of the other hand down along the inside of his cheek to the base of the tongue. Use a hooking motion from the side of the mouth toward the center to dislodge the foreign body.



Airway Obstructions

Open an Obstructed Airway--Casualty Lying or Unconscious



WARNING

Take care not to force the object deeper into the airway by pushing it with the finger.

